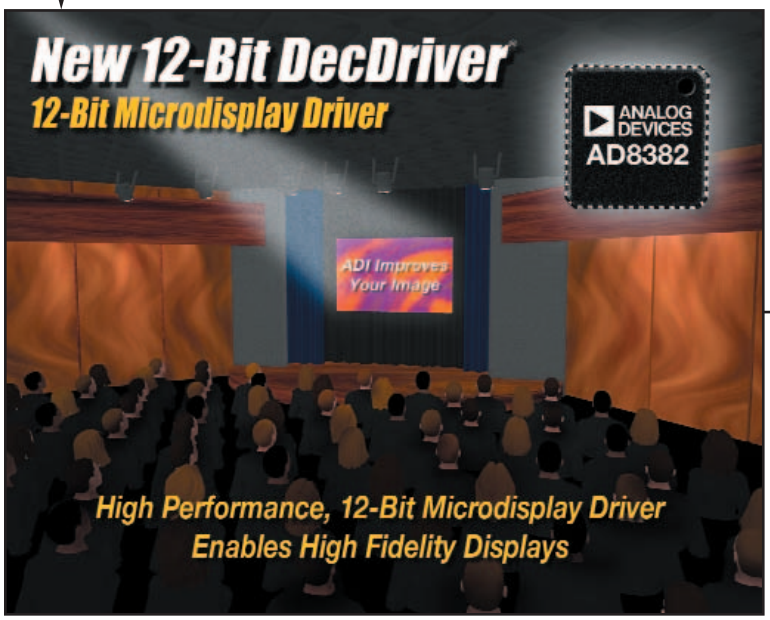
12-Bit Microdisplay Driver Enables High Fidelity Display



Projection systems based on microdisplay technologies offer crisp, high resolution, full color displays, and are increasingly common in high quality, large display environments such as public display, concerts, home theater, education, and digital cinema. To meet the demanding performance targets required to enable a high level of fidelity for such large projection venues, Analog Devices has added a new member to its *DecDriver*® family of LCD microdisplay drivers, the AD8382. The AD8382 DecDriver builds upon the success of this product family by enabling market-leading, high quality, high brightness LCD projectors. The 12-bit resolution of the AD8382 takes full advantage of a system design that processes 10-bit imaging data. 12-bit driver resolution improves display uniformity, which is particularly noticeable in brighter displays.

The AD8382 eliminates the need for external amplifiers and calibration cycles by providing laser trimmed accurate, high voltage output signals that settle quickly into capacitive loads. The AD8382 eases front or rear projection system design through fast, high speed decimating input logic that can be loaded left to right or vice versa. The AD8382 represents a complete, feature-rich projection system design solution that includes logic controlled inversion, as well as voltage controlled midscale and brightness and contrast controls. Available in a 7 mm × 7 mm package, this complete LCD microdisplay driver solution will dramatically reduce the size of your LCD projector electronics board. The AD8382 DecDriver architecture enables a modular design approach for high quality projection systems with resolutions to SXGA levels and beyond.

The AD8382 is fabricated using ADI's XFCB26 fast bipolar 26 V process, providing fast input logic, trimmed accurate bipolar DACs, and fast settling, high voltage precision drive amplifiers on the same chip. The AD8382 dissipates nominally 0.74 W of static power. The STBY pin reduces power to a minimum, with fast recovery. The AD8382 is offered in a 48-lead 7 mm × 7 mm × 1.4 mm LFCSP and operates over the 0°C to +85°C temperature range.

Key Features

- Laser trimmed output accuracy allows multiple AD8382s to provide good color matching for higher resolution microdisplays, delivering high quality display signals without calibration.
- Fast, high voltage output drive capability eliminates the need for external amplifiers by delivering fast settling time into capacitive loads—22 ns into 200 pF.
- Fast input data rates (120 MSPS) and a linear 12-bit signal interface provide a high fidelity interface to the highest resolution microdisplays.
- Fast 1-bit logic inversion control enhances display quality by allowing frame or line inversion.
- The AD8382 is a complete solution that includes a 9 V to 18 V output dynamic range. Inversion, contrast, and brightness controls optimize the output range for a specific LCD panel interface, whether HTPS, LTPS, or LCOS.
- Even/odd and left/right imaging signal controls enhance design flexibility for the high speed interface of higher resolution projection systems for both front and rear projection.
- 740 mW static power consumption allows multiple AD8382s to drive high resolution LCD panels without excessive power consumption.
- The AD8382's accuracy, package, and power enable dramatic improvements in PCB size and performance for projection drive electronics.

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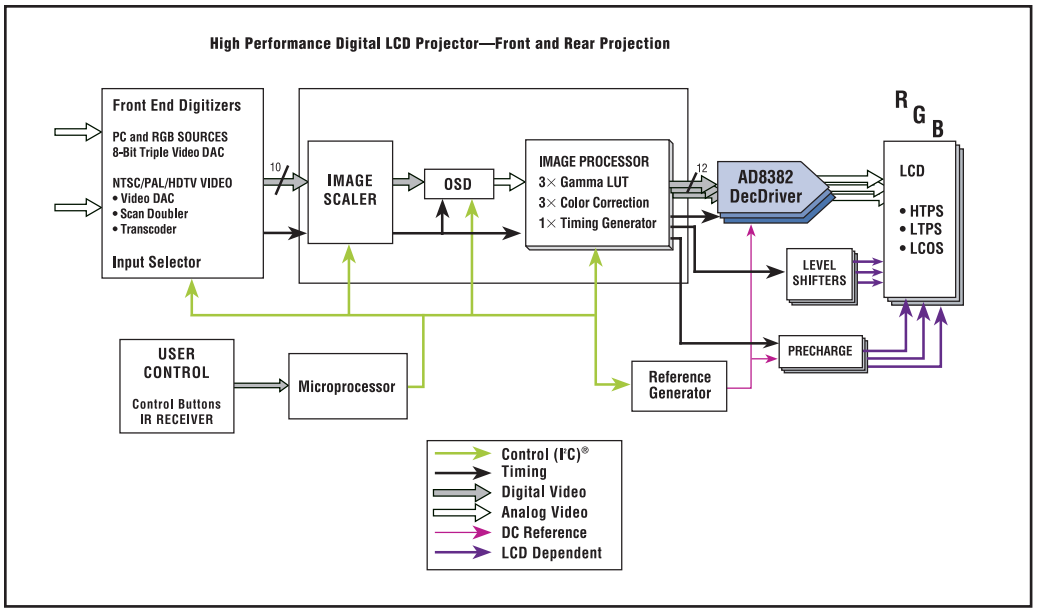


High Performance LCD Projector Signal Chain

At the microdisplay interface, the 12-bit resolution of an LCD driver such as the AD8382 allows the designer to take full advantage of gamma corrected input data resulting from 10-bit processing. The benefits are particularly observable near dark gray levels. A 12-bit resolution driver delivers better display uniformity, which is more noticeable in brighter displays. Video or graphics data can be introduced to a projector through a high end input digitizer such as the AD9981, which converts high speed RGB data at 10-bit resolution. Alternatively, a multipurpose input device such as the ADV7402 encodes various video formats and decodes 12-bit RGB from a PC.

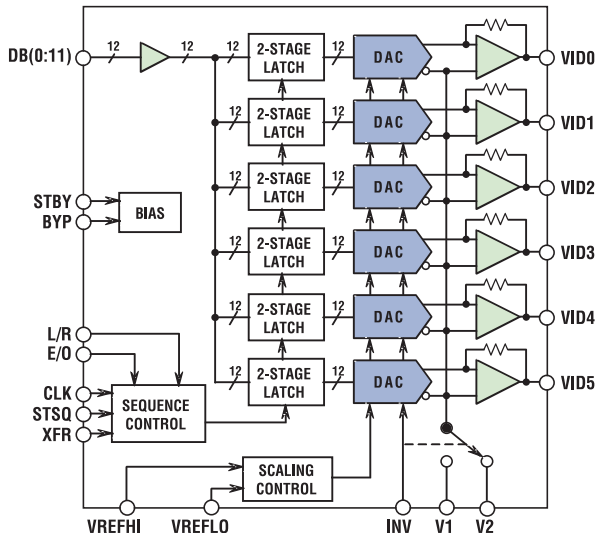
Additional Advantages

- Laser trimmed output accuracy enables modular system architecture for various resolution microdisplays, including SVGA, SDTV, XGA, WXGA, SXGA, and beyond
- INV bit reverses polarity of video signal, allowing fast frame or line inversion
- Voltage controlled video references and full-scale (contrast) output levels
- Nominal 3.3 V logic and 9 V to 18 V analog power supplies
- Low static power dissipation, 740 mW with standby feature
- Available in 48-lead 7 mm × 7 mm LFCSP

Application

- Microdisplay column driver for projection systems

AD8382 DecDriver Functional Block Diagram



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